

below the muffles and have an upward direction of flow. The heating of these muffles is therefore not uniform and they wear out very rapidly.

Fig. 97 shows the method of reconstructing this furnace to conform to the rational principles of the circulation of gases. For this purpose the hot gases enter the chamber at the top and pass downward, and the waste-gas flue at the bottom of the chamber in which the muffles are set draws off the coolest gases and passes them, to the chimney.

It is by reason of the incorrect direction of the flow of the hot gases that the vertical muffles used for the tramping of shells

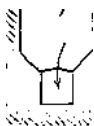
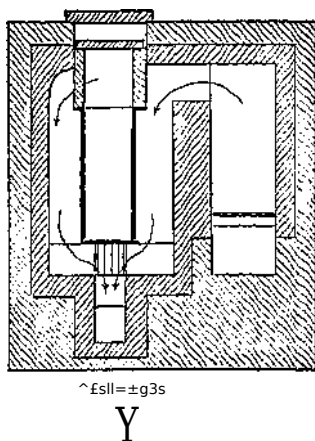


FIG. 97.

FIG. 98.

for artillery rarely work well. Fig. 98 shows a method of setting these muffles which has given good results in the author's practice, because it gives the correct circulation of the hot gases. The muffle furnace shown has "worked perfectly."

Attention is also called to a horizontal muffle furnace in the

Petrograd Arsenal which -was at last reconstructed as directed by the author and which worked perfectly thereafter. <1> Originally this muffle furnace, which operated "with updraft, had four fire-boxes furnished with clampers; the muffle was of cast iron, 3560 mm long, 1000 mm wide and 100 mm high. It did not operate in a satisfactory manner. By direction of the author it was transformed into a downdraft furnace without any alterations

⁽¹⁾ *Revue de l'industrie russe de Métallurgie*, No. 5, 1913; XI, bis, p. 322, mai 1914; Appendix V.